GASTROPODA.

The following species are mentioned by Dr. van Lidth de Jeude which were not found in Mr. Grant's collection :— *Siphonentalis affinis* and *Hero formosa*, Lovén, the latter in the Matotschkin Shar, where also other species of Nudibranchiata occurred.

CONCHIFERA.

Dr. van Lidth de Jeude mentions *Pecten islandicus*, *P. septemradiatus* and *P. abyssorum*?, *Cardium ciliatum*, and *Panopea norvegica* as occurring in Barents Sea.

On examining the list of animals collected by Mr. Grant it will be found that there are enumerated 153 species, namely— Protozoa 1, Spongia 4, Hydrozoa 13, Actinozoa 2, Echinodermata 16, Annelida 15, Gephyrea 1, Crustacea 24, Polyzoa 32, Brachiopoda 2, Mollusca 36, Pisces 7.

Considering the limited means at Mr. Grant's disposal, and the confined space on board the little vessel, in which fourteen persons were cooped up, it will probably be acknowledged that he has achieved satisfactory results by his efforts to secure specimens for the Exeter Museum.

XXXIII.—*On new Hydroida and Polyzoa from Barents Sea.*

By the Rev. Thomas Hincks, B.A., F.R.S.

[Plate XV.]

A full list of the Hydroida and Polyzoa obtained by Mr. W. J. A. Grant in the Arctic seas, during the expedition of the Dutch exploring-vessel the 'Willem Barents,' is included in Mr. D'Urban's report, published in the present Number of the 'Annals.' This paper will contain a detailed description of the new forms which occur in the collection.

Subkingdom CŒLENTERATA.

Class Hydrozoa.

Order **HYDROIDA.**

Suborder Thecaphora, Hincks.

Sertularella, Gray.

Sertularella quadricornuta, n. sp. (Pl. XV. figs. 1, 1*a*.)

Stem almost straight or very slightly sinuated, irregularly

branched. *Hydrothecæ* very large, separated by a joint, tall, erect, very slightly expanded below and towards the orifice (of very much the same width throughout), distinctly ribbed transversely; orifice quadrate, with four denticles and an operculum, the stem below the calycles more or less annulated or marked with transverse rugæ. *Gonothecæ* produced at the base of the calycles, ovate, subpedicellate, covered with prominent transverse ribs, with a neck-like termination above, and on the summit four large and conspicuous spines.

Grows in somewhat straggling bushy tufts, which attain a height of about 2 inches.

This species bears a general resemblance to the *S. gigantea* of Mereschkowsky, which occurs in the White Sea*; but the latter has an angularly bent stem, and is also described as having the margins of the cells "always furnished with several ledges (sometimes 8 or even 10) and an equal number of small opercula, one above the other." This is made a distinctive character, and is said to be always present in adult cells.

In these particulars *S. gigantea* differs from *S. quadricornuta*; and though it may be doubtful whether the ledges below the margin should be accounted a character of much significance, I hesitate to unite the two forms without further evidence of their identity. Unfortunately M. Mereschkowsky did not observe the capsule of his species. That of *S. quadricornuta* exhibits very marked peculiarities, and separates it from any form with which I am acquainted. In its ribbed character it agrees with that of *S. tricuspidata*, but it is distinguished from it by its coronal of spines.

The ramification of the present species is irregular; the shoots bifurcate near the base, and the secondary shoots divide and subdivide freely. M. Mereschkowsky identifies his *S. gigantea* with the *S. polyzonias*, var. *gigantea*, mihi †, and is surprised that I should not have recognized in the latter a distinct species. I have not access, at present, to my specimens of the Greenland variety; but if my figures of it (drawn with the camera) are to be trusted, it is certainly different from the *S. gigantea*, Mereschkowsky; and while the latter is undoubtedly entitled to specific rank, I am still unable to find any character to separate the former from *polyzonias* but its size. Sars appears to have taken the same view.

I venture, then, to think, with great respect for M. Mereschkowsky's opinion, that his *S. gigantea* and my *S. polyzonias*,

* "Studies on the Hydroida," Ann. & Mag. Nat. Hist. for March and April 1878.

* "On Deep-water Hydroida from Greenland" ("Iceland" wrongly in the text), 'Annals,' ser. 4, xiii. p. 151, pl. vii. figs. 11, 12.

var. *gigantea*, are two different things; and whilst I quite agree with him that the former is a species, I still hold that the latter is properly accounted a variety.

Suborder Athecata, Hincks.

Note on Myriothela phrygia, *Fabricius.*

A *Myriothela* occurs amongst the dredgings from Barents Sea which is undoubtedly distinct from the species described under the above name in my 'History of the British Hydroid Zoophytes' and in Allman's paper in the 'Philosophical Transactions'*. Prof. G. O. Sars has already pointed out that the *Lucernaria phrygia* of Fabricius is not identical with the British form; and he reports the occurrence of both species on the Norwegian coasts. He does not give any detailed account of the differences between the two; but he mentions that their mode of attachment is dissimilar.

In a notice of the third part of the 'Fauna Littoralis Norvegiæ' in the 'American Journal of Science' (vol. xvii. March 1879), Prof. Verrill describes a *Myriothela* which had been dredged off the coast of Nova Scotia, and which he believes to be the genuine *M. phrygia* of Fabricius. His account of it leaves no doubt that it is identical with the Barents-Sea species.

In this form the tentacles, which are furnished with very large capitula, are thickly distributed over more than half the body; they seem to want (so far as we can judge from a specimen preserved in spirit) the purplish spot on the summit, which is found in the British species. Beneath the tentaculiferous region the body is somewhat constricted, whilst the terminal portion is much swollen (having quite a bulbous appearance), and is densely covered with the reproductive zooids. The latter are, I think, larger than I have seen them in the British species; and each of them bears a considerable cluster of gonophores. They extend to the very base of the body, which terminates in an obtuse extremity and is totally destitute of any chitinous investment. The naked tract which, in our British form, succeeds the reproductive zone, and the bent or decumbent extremity clothed with polypary, have no representatives here. The base gives off a number of slender, filiform processes, which take their origin amongst the reproductive zooids; and these expand at the extremity into adhesive disks, by which the animal is attached.

* "On the Structure and Development of *Myriothela*," Phil. Trans. vol. 165, pt. 2, p. 549.

It seems probable that this is the second species referred to by G. O. Sars, and that Prof. Verrill is right in regarding it as the genuine *Lucernaria phrygia* of Fabricius. Provisionally, at least, it may bear his specific name.

Subkingdom MOLLUSCA.

Class POLYZOA.

Group *a.* *ENTOPROCTA.*

Order GYMNOLÆMATA.

Suborder CHEILOSTOMATA.

PHYLACTELLA, Hincks.

Phylactella (?) *grandis*, n. sp. (Pl. XV. figs. 4, 5.)

Zoarium incrusting; *zoœcia* very large, suberect towards the oral extremity, below depressed, usually much expanded below, above narrowed off into a neck; walls thick, surface minutely and densely granular, a row of pores round the margin and across the front of the cells, a little above the base; orifice (adult) much contracted, elongated transversely, very narrow between the upper and lower margins (transversely semielliptical), primary orifice semicircular; oral spines four. *Oœcium* elongated, narrowed towards the opening, much thrown back, a spine visible on each side in front of it.

This fine species is referred provisionally to the genus *Phylactella*. The peristome is much raised round the sides and front, forming a very narrow secondary orifice; the upper margin is not elevated. The cells are highly calcified, and the walls remarkably thick and solid.

MUCRONELLA, Hincks.

Mucronella simplex, n. sp. (Pl. XV. fig. 7.)

Zoarium incrusting; *zoœcia* quincuncially arranged, large, ovate, distinct; surface moderately convex, slightly roughened, covered with small punctures; orifice ample, quadrato-orbicular; peristome raised all round, slightly bent outwards in front, the lower margin rising in the centre into a prominent point or knob. *Oœcium* large, rounded, somewhat roughened, and punctate, the peristome carried up on it at each side.

A pretty species, in which the generic character is represented in its simplest form; the oral denticle is wanting.

ESCHARA, auctt.

Eschara (auctt.) *glabra*, n. sp. (Pl. XV. fig. 6.)

Zoarium erect, having the zoœcia in two layers, placed back to back, dichotomously branched, the branches compressed and slightly contorted. *Zoœcia* arranged quincuncially with great regularity, ovate, surface smooth; orifice depressed, rounded above, lower margin straight, peristome not raised; the whole of the front of the zoœcium (in the adult state) covered by an avicularian cell, which is so closely united to it, down the sides, as to appear, at first sight, an integral portion of it; mandible terminal, prominent, overhanging the orifice, much thickened, semicircular. *Oœcium* globose, somewhat depressed; surface smooth and shining.

To understand the structure of this curious species, it is necessary to study the zoœcium in the earlier stages of its development. When adult, and overlain by the avicularian cell, it appears subcylindrical, well arched in front, with a smooth, dense surface; but in its earlier stages the avicularian cell is quite undeveloped, and its surface is somewhat flattish; a little later on the walls of the former may be traced, rising on the front wall of the zoœcium, which is ultimately completely covered in and concealed.

Every zoœcium may be regarded as composed of two chambers, one superimposed upon the other and closely united to it. The true avicularium occupies the upper extremity of the avicularian cell, is circular in form, and very conspicuous.

In the lower portions of the stem, calcification is carried to a great extent, the orifices are deeply sunk, and much changed in character; in the basal region they are obliterated, and the outlines only of the cells are faintly traceable on the surface.

Eschara perpusilla, a form described by Busk in his account of the Polyzoa obtained on the last Arctic Expedition under Sir G. Nares *, is evidently an allied species; but in this case the avicularian cell is only about half the length of the zoœcium.

It may be necessary to constitute a new genus for the reception of this species; but further study of kindred forms is necessary before it can be done satisfactorily, and meanwhile

* Narrative of a Voyage to the Polar Sea during 1875–76 in H.M. Ships 'Alert' and 'Discovery.' By Capt. Sir G. Nares. Vol. ii. Appendix, pp. 283–289.

it may bear the generic name to which it would be entitled under the older systems, and which merely indicates its erect and ramose habit.

Family **Celleporidæ**.

Cellepora, Fabricus.

Cellepora ——, ? n. sp.

Zoœcia suberect, urceolate, often obscurely furrowed or striated radiately in front, ventricose below; orifice orbicular, with a slight sinus in the inferior margin (produced below); peristome somewhat raised, and in front (in adult cells) carried up into a very prominent mucro, bearing on the summit a small subcircular avicularium.

Colony consisting of a small cluster of cells.

Probably this form should rank as a distinct species, though in some respects it bears a resemblance to *C. armata*, mihi. From the latter it is distinguished by the striated surface, the round avicularium, and the total absence, in the specimens which I have examined, of the spatulate avicularia, which constitute so conspicuous a feature of *C. armata*. The latter character, I am well aware, does not count for much; there is, however, a certain dissimilarity in general appearance between the two forms, which leads me to suspect that they may prove to be distinct*. If so, the Barents-Sea species may be distinguished as *C. striatula*.

Note on Flustra solida, *Stimpson* (*Flustramorpha*, Gray, Verrill).

(Pl. XV. figs. 2, 3.)

This species is better known as the *Eschara palmata*, Sars, which, according to Verrill†, is identical with the *Flustra solida* of Stimpson. A difficult question arises as to its systematic position, and Stimpson's generic name is only retained provisionally.

A striking character is the presence of numerous tubular fibres, which pass downward from various points on both the surfaces of the zoarium, uniting below to form a kind of stem, and finally giving off a multitude of fibrils, which serve as a

* I have only examined one or two small specimens of the present form.

† "Notice of recent Additions to the Marine Invertebrata of the North-eastern Coast of America," &c., Proc. of United-States National Museum, Nov. 5, 1879, fig. 165.

means of attachment. The fibres originate in certain cells whose surface is completely invested by a membranous envelope, and are a direct extension of this epidermal covering. They pass downwards along the surface, and as they advance become closely appressed one to the other, so as to constitute at last a cable-like stem, composed of many strands. The extremities bifurcate and run out into long slender fibres, which form a considerable mass at the base. A similar peculiarity is exhibited by *Eschara flabellaris*, Busk*, and *Flustra marginata*, Krauss†; but in these cases the fibres, though traversing the zoarium in various directions (at least in the latter of the two species), are principally aggregated along the margin, where they form a thickened rib. Both these forms are South-African.

Gray has instituted a genus (*Flustramorpha*) for these forms, and has taken *F. marginata* as the type. It is really based on a single character (the presence of the tubular fibres), which is the only distinctive element in his diagnosis. His account of the orifice of the zoœcium is quite unintelligible; and the other points noted are all common to *Flustramorpha* and a large section of the old Escharine group.

The presence of the tubular fibres, however, cannot, in my judgment, be accounted a generic distinction: these structures are essentially identical with the (so-called) radical fibres, which occur on so many of the Polyzoa, and to which no special significance attaches. This view is confirmed by an examination of the zoœcia of such a form as *Eschara flabellaris*. Though the mode of growth is Escharine, the cells are those of a *Microporella*, mihi, and, I believe, are specifically identical with those of the common *M. ciliata*, Pallas. I have already described a variety of the latter, which assumes an erect foliaceous habit, and has the cells in two layers, placed back to back‡; and it is a question whether *Eschara flabellaris* should be accounted any thing more than another variety or form of this protean species.

In *Flustra solida*, Stimpson, we have a totally different *type of cell* (Pl. XV. fig. 3); and it would be quite impossible in any natural system to rank it with *Eschara flabellaris* on the strength of the supporting fibres, which are common to them both.

Gray's genus, then, is quite untenable; and the species composing it must be ranked according to the character of their

* British-Museum Cat. part 2, p. 91, pl. cvii. figs. 7–10.
† Corall. und Zooph. der Südsee, p. 35, pl. 1. fig. 3, *a–d*.
‡ History of the Brit. Marine Polyzoa, vol. i. p. 210.

zoœcia. The exact position of *Flustra solida* is somewhat difficult to determine. Smitt has placed it in his *Escharella*, which is essentially equivalent to the genus *Smittia*, mihi; but from this group it differs in several important points. For the present it must hold a provisional place.

Suborder Ctenostomata.

Alcyonidium, Lamouroux.

Alcyonidium excavatum, n. sp. (Pl. XV. figs. 8, 9.)

Zoarium minute (about ½ inch in height), erect, somewhat clavate. *Zoœcia* on one surface only, which is convex, the other concave, hollowed out in the centre; the cells irregular in shape, the outlines indistinctly visible on the surface; no papillæ.

This interesting form is characterized by its minuteness, by the disposition of the zoœcia on one side only of the claviform zoarium, and by the channelled condition of the opposite side. I have only seen two specimens, which occur on the tube of an Annelid: they are both of about the same size, and exhibit the same characters; and I see no reason to doubt that they are adult organisms. The centre of the non-celliferous surface is hollowed out from the top to within a short distance of the base of the zoarium; and the excavated portion is surrounded by a narrow border.

Arachnidium, Hincks.

Arachnidium simplex, n. sp. (Pl. XV. figs. 10, 11.)

Zoœcia disposed in linear series, elongate, expanded above, and slightly attenuated downwards, prolonged below into a delicate adherent fibre, by which they are linked together; the oral extremity turned obliquely upwards and free.

Hab. On the stems and branches of *Menipea*.

Though I have referred this form to *Arachnidium*, it differs in one respect from the other known members of this genus; indeed the generic character must be modified to admit of its reception. In the present species, so far as I have seen, the zoœcia are always arranged in simple unbranched linear series. In the typical *Arachnidia*, on the contrary, branch lines are given off from each side of the zoœcia, and the zoarium is more or less regularly reticulate.

The present form has the closest affinity in general structure with *Arachnidium*; and at present I do not see any sufficient ground for detaching it from this group.

Group *b.* *Ectoprocta.*

Order **PEDICELLINEA.**

Family **Pedicellinidæ.**

Barentsia, nov. gen.

Generic character. Polypides with a cup-shaped body supported on a long peduncle, having a muscular enlargement at the base, the upper part fleshy and naked, the rest chitinous; peduncles borne on an erect chitinous stem, bulbous at the base; the stems united by a creeping stolon, with a chitinous investment.

The polypides of this very interesting form closely resemble those of *Pedicellina*; but it is separated from the latter genus by the singular structure of its zoarium. From the creeping stolon (which is more or less chitinous, and not, as in *Pedicellina*, a mere soft fleshy thread) rise at intervals tall chitinous stems terminating below in a somewhat bulbous enlargement. Along one side of the stems are placed at short distances from one another small bracket-like projections; and each of these supports a long peduncle with a polypide at its upper extremity. Immediately above the point of origin the peduncle is enlarged for a short distance, as in *Pedicellina gracilis*; and this portion is probably muscular in structure. Above the enlargement the peduncle is slender, and for a large proportion of its length composed of chitine; the terminal portion, however, immediately supporting the polypide is fleshy as in *Pedicellina*. Sometimes the main stem terminates above in two polypides (Pl. XV. fig. 12). One of the most striking differences between *Barentsia* and *Pedicellina* is the extent to which chitine enters into the structure of the former. In *Pedicellina* the whole colony is usually fleshy; the only exception is found in *P. gracilis*, which has the upper portion of the peduncle composed of a rigid (and probably chitinous) material.

Barentsia bulbosa, n. sp. (Pl. XV. figs. 12–14.)

Stolon a delicate chitinous fibre; erect stems usually tall, with numerous bracket-like projections arranged unilaterally, base enlarged. *Peduncles* long and slender, the soft portion supporting the polypide short. *Polypide* of a regular cup-shape, not distorted; tentacles (?).

The enlarged base of the peduncle seems to correspond with the similar structure in *Pedicellina gracilis*. The body of the polypide is as regular in form as that of *P. nutans*, Dalyell,

and exhibits none of the distortion which is so conspicuous in *P. cernua*. Within the stem a very delicate ringed or spiral structure is visible.

EXPLANATION OF PLATE XV.

Fig. 1. *Sertularella quadricornuta*, n. sp. 1*a*. Gonothecæ.
Fig. 2. *Flustra solida*, Stimpson, nat. size.
Fig. 3. *Flustra solida*, zoœcia, magnified.
Figs. 4, 5. *Phylactella* (?) *grandis*, n. sp. 5*a*. Oœcium.
Fig. 6. *Eschara* (auctt.) *glabra*, n. sp.
Fig. 7. *Mucronella simplex*, n. sp.
Fig. 8. *Alcyonidium excavatum*, n. sp.
Fig. 9. *Alcyonidium excavatum*, showing the concave side.
Figs. 10, 11. *Arachnidium simplex*, n. sp.
Figs. 12, 13. *Barentsia bulbosa*, n. sp. Two of the erect stems, highly magnified.
Fig. 14. *Barentsia bulbosa*: a single peduncle and polypide.

XXXIV.—*Descriptions of six new Species of Shells from Vancouver Island.* By Edgar A. Smith.

The forms here described form part of a collection recently obtained by the British Museum.

Pleurotoma vancouverensis.

Shell fusiform, white. Whorls about eight in number, a trifle concave at the upper part, bulging beneath, cancellated with longitudinal fine costæ and spiral ridges, the points of intersection being somewhat nodulous. Spiral ridges or liræ about six or seven on a whorl, whereof the three uppermost are finest. Beneath these comes one rather stouter, which is again succeeded by two still coarser at the bulging part of the volutions; and another finer one is visible on some of the lower whorls adjacent to the suture. The costæ are flexuous, first bearing to the right and then to the left, and are thicker at the lower part or upon the stout transverse liræ, the nodules here being also coarser than those above. Last whorl contracted below the middle and shortly caudate, encircled with spiral ridges to the extremity, which are scarcely affected by the longitudinal ribs beyond the middle. Aperture less than half the entire length. Labrum thin, broadly notched beneath the suture, arcuate and prominent below the incision. Columella a little oblique, smooth, scarcely tortuous. Canal narrowish, moderately short. Length 11½ millims., diam. 4.

The absence of colour and the peculiarity of its sculpture will distinguish this pretty form.